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BOS BRACHYCEROS OR DWARF CATTLE

BY

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This article is written (*a*) to refute the claims that the dwarf short-horn cattle of Africa are a stunted variety of a large type, and (*b*) to show that it was the earliest type of *Bos* to be domesticated.

Bos brachyceros NOT A STUNTED OR DEGENERATE ANIMAL

Duerst, Adametz and others have claimed that these dwarf, short-horn cattle, as a result of an inhospitable and malnutritional environment, are the stunted descendants of the large animal *Bos nomadicus*. Peake & Fleure (a 1927, 32) subscribe to this point of view : "The *Urus*, called by Bojanus *Bos primigenius*, and by Rutimeyer *Bos paleotaurus*, ranged all over Europe and Asia, excepting the peninsulas of Arabia, Hindustan and Malaya, during most of the Pleistocene period, though it appears not to have occurred wild in Africa ; it seems to have survived over this tract into much later times. By degrees the Asiatic members of the species became slightly differentiated from their European neighbours, especially in the form of the horns. This Asiatic variety was found wild in north India by Falconer & Cautby, who named it *Bos nomadicus* ; a similar form was named by Duerst *Bos macroceras*, though he later admitted its identity with *B. nomadicus*.

"The cattle found in a domesticated state in the early settlements of Mesopotamia and Turkistan seem to belong to this species, which is also found in Egypt during the early dynasties. The conditions accompanying domestication resulted in a considerable diminution in the size of the animal, and also in the length of its horns, so much so that Duerst is of the opinion that the small short-horned animal found in the Swiss Lake dwellings and named by Rutimeyer *Bos brachyceros* is but a much diminished form of the same species."

The Nigerian Handbook (1943, p. 143) ascribes a similar origin for these dwarf cattle. "The pagan or West African shorthorn breed is dwarfed in stature, humpless, and does not resemble the zebu in any characteristic. A full grown pagan bull in good condition will weigh 350 lb. and measures about 36 inches to the top of the withers. There are some 200,000 head, mainly in the Southern Provinces. The origin of these dwarf cattle is not definitely known but from the fact that a straight-backed breed of a much larger size is found in large numbers in the Gold Coast colony and in other parts of the West Coast, it is thought that the animals found in parts of Nigeria are but dwarf specimens of the same breed which may have come originally from the north. In Nigeria they are commonly found in tsetse fly belts and, although harbouring the infection of trypanosomiasis, maintaining apparent good health and condition. It is presumed that the dwarfed growth of these animals is but the result of successive generations having been born and reared under the adverse conditions of chronic trypanosomiasis, probably in conjunction with a deficiency of minerals in the pasturage."

Worthington (1938, p. 413) writes : "*Brachyceros* or true short-horn is thought by some authorities to be descended from a small wild ancestor and by others to be a variation of the *urus* due to unfavourable environment, but whatever its origin, *Bos brachyceros* is a distinct type."

More recently another explanation, again without foundations, has been offered for these pygmy cattle in Nigeria. Shaw & Colville (1950, p. 23) write : "In a hot humid tropical climate such as that in the southern half of Nigeria, Wright suggests there may be two features of dwarfing that make the smaller animal the most desirable class of stock for such conditions. Dwarfing may be a means of furnishing an essential supplementary heat regulating mechanism. The ratio of skin area and, therefore, of cooling surface to body-weight is greater in the small than in the large animal. Further, in order to reduce the heat output of the body in a humid climate where heat transfer is impeded, the food intake may be voluntarily limited. This, whilst lessening the strain on the heat resisting mechanism, would also result in a diminished growth rate, a decrease in body size and a limited rate of productivity."

No data exist to support these conclusions. If food intake be considered from two aspects (*a*) food to maintain bodily warmth, and (*b*) food to maintain growth, a reduction in (*a*) does not necessarily mean a reduction in (*b*), which is what is inferred.

Shaw & Colville offer no explanation for the occurrence simultaneously in the same areas of the Jos Plateau, Bamenda and the Accra plains of Dwarfs, Sangas and even Zebus, nor do they offer any explanation why these dwarfs fail to improve in size and conformation under excellent environments.

These explanations of the origin of the pagan, dwarf cattle of the West Coast of Africa are pure Lamarkism, namely, the inheritance of acquired characteristics, and do not fit the facts either of heredity or of what is already known of this dwarf breed.

The hereditary principle disclosed in modern experiments is of sufficient interest as throwing light on the dwarf short-horn for it to be quoted *in extenso*. Crowther (1938, II, 242), describing Johannsen's experiments with beans, writes : "These plants multiply by self-fertilisation, so no gene goes into the gene-equipment of descendants which was not in the parent bean. Johannsen kept the seeds of each plant separate. He found that the plants from these seeds produced crops of beans with a definite range of size. The average size of the beans from the smallest seed of the parent bean was just the same as the average size of the beans from the largest seed. Also, the range of size of the descendants included the size of the parent bean. What do these results mean ? That there is a fixed factor in the beans which tends to keep them to a certain size. How, then, do the variations in size arise ? These must be due to accidental environmental circumstances. If the bean grew on a corner of the pod, or on a feeble branch of the plant, or on poor or rich soil, or was exposed to especially good or bad climatic conditions, the tendency to grow to a certain size would be stimulated or inhibited. The variation in size must be due to accidental causes arising during lifetime. The very important principle emerges that small variations arising only during lifetime have no effect on the descendants of the

organism showing them. The factor, the gene, which determines the tendency to grow to a certain size, is not affected by environment because the descendants of beans which had the most varying environmental life, still carry the same tendency to grow to a particular size. If a seed from the parent bean . . . were in stony soil, cut off from sunshine by a wall, its descendants would be puny. But these puny seeds would give beans of the normal size if set in a normal environment.

" The offspring from one bean can be cultivated for many generations, and each generation be grown in a different environment, yet the seeds from the last generation will have the same tendency as those from the first to grow to a certain size. The gene for size remains constant and is passed on unchanged in constitution from generation to generation."

These conclusions are but a restatement in more detail of Weisman's law of the continuity of the germ plasm. It may be argued that these conclusions apply to beans, whereas cattle is the subject under review. In reply, I may point out that the basic principles that govern the genes are also the basic principles of life ; Roger Mendel's work was done on peas but its conclusions are applicable to life, whether that life be exhibited in bird, or beast or bean.

On the principle that " average size " is a gene determinant, not entirely an environmental one, then under idyllic conditions the pagan, dwarf cattle, if dwarfness is a true gene characteristic and not an environmental response to poor conditions, should remain dwarf, should show a size averaging with the best of these everywhere.

Can such conditions be found ? The answer is yes. The pagan, dwarf short-horn has long been established in the Highlands of the British Cameroons, *e.g.*, in the Bamenda Division of which I was in charge for some 10 years. Both veterinary and agricultural officers have declared the wild clover pastures and grazing here surpasses anything elsewhere in Nigeria.

In addition, these Highlands are cool, free of tsetse and, until 1940, no cattle diseases had been known among these herds of dwarf short-horn where, up to 1918, they were completely isolated from other cattle, *e.g.*, Fulani. In fact, till 1917 Bamenda had been a cattle paradise. Yet in spite of all these advantages possessed for many hundreds of years, these dwarf short-horn are still the same small, straight-back, black, dun or piebald animal that I had lived with for 20 years in the hot, humid tsetse stricken rain forest villages of the Cross river and the Niger delta. In spite of these idyllic conditions, these pagan cattle have not thrown off what is alleged to be the stigmata of degeneration ; they are still dwarf, short-horn cattle. Such continuous breeding true to type fits the scientific facts, namely, that they are a true, dwarf breed and not stunts or degenerates of larger breeds.

In an article, " Pygmies—Human and Otherwise," I (1951, 227) pointed out that the human pygmies of the Congo, for example, were only an instance of pygmyism in general, there being pygmy elephants, pygmy hippo and pygmy cattle, including *bos* and *caprids*. In none of these and in the other examples given is there any suggestion that these pygmy types are stunted specimens of large stocks. They all breed true to a pygmy type. Though no controlled experiments have been conducted on cattle on lines similar to those carried out by Johannsen on beans, yet the following information shows what happens to the larger breeds of *bos* when reared under bad conditions and are then restored to normal conditions. They react as did the beans, they increase to the average size normal for their species.

Thus Lord Ernle (1932, p. 72) writes : " The foundation of the Smithfield Club in 1798 did much to promote the improvement of livestock. Some idea of the effect produced may be gathered from the average weights of sheep and cattle sold at Smithfield Market in 1710 and in 1798. In 1710 the average weight for beeves was 370 lb., for calves 50 lb., for sheep 28 lb., for lambs 18 lb.; in 1795 beeves had risen in average weight to 800 lb., calves to 148 lb., sheep to 80 lb., lambs to 50 lb. This enormous addition to the meat supply of the country was due partly to the efforts of agriculturists like Tull, etc., partly to the enclosure of open fields and commons, which their improvements encouraged. On open fields and commons, owing mainly to the scarcity of winter keep, the livestock was dwarfed in size and weight. Even if the number of animals which might be grazed on the commons was regulated by custom, the stint was often so large that the pasture could only carry the smallest animals. Where the grazing rights were unlimited, as seems to have been not unusually the case in the 18th century, the herbage was necessarily still more impoverished, and the size of the livestock more stunted. On enclosed land, on the other hand, the introduction of turnip and clover husbandry doubled the number and weight of the stock which the land would carry."

Here is ample confirmation of Johannsen's bean experiments. Here, the small cattle were not a dwarf breed but stunts of a large breed. When optimum grazing conditions were restored the stunts reverted to their basic type, to the large breed of cattle. If, now, the African dwarf short-horn were likewise a stunted large type then when placed in optimum grazing conditions, a cool climate, clover hay, freedom from protozoic and endemic disease, it should revert to the large type of which it is asserted to be a stunt. That these dwarf cattle do not do so is proof that they are a dwarf breed and bred true to type in optimum conditions by remaining a dwarf breed.

For the above reasons Stewart's, ex-Director of Veterinary Services in the Gold Coast, definition of the *brachyceros* type found in Africa must be rejected. He writes (1951, Vol. 63, No. 27, p. 454) : " These cattle are a mixture of three basic African breeds, the Hamitic Longhorn, the *brachyceros* dwarf cattle and the Zebu." He has since written to me as follows : " My remark was a definition of the West African shorthorn cattle not the *brachyceros* type, which is not a mixture. Sorry for the confusion, owing to my adoption of the term West African shorthorn, to denote the unhumped cattle generally."

Mr. Stewart has generously placed the following personal observations on *Bos brachyceros* at my disposal. He writes : " I confess to having quite a lot of sympathy for my friend Aillerie's outlook *re* the Baoule cattle, which though uneconomic were very beautiful little animals. . . . The Baoule cattle proved absolutely your contentions. They were 100 per cent. healthy, they appeared to have a resistance amounting to an immunity to all indigenous protozoal conditions, including trypanosomiasis, but they remained within the weight limits and conform completely to your quotation of Crowther *re* beans . . .(the African native was also aware of this genetic factor of dwarfism). I remember when I first came (to the Gold Coast) in the early 'twenties, and the Director of Veterinary Services had just introduced rigid quarantine regulations and prescribed livestock routes for imported French Zebus and the French had forbidden the export of bulls along with an extensive castration programme of their own. A deputation of leading native cattle owners of the North-Eastern areas came to me at Bawku and told me that the deprivation of Zebu bulls, which they used for crossing with their own cows, would mean a diminution of

the size of their own cattle, which were, what Curson calls *Sangas*, unhumped cattle with marked Zebu points. They said that if they could not get Zebu bulls, gradually their cattle would get smaller and 'there was something in them which made them get small if left to themselves.' . . . Another reason for rejecting improvement by means of pure or grade N'Dama cattle was this factor of dwarfism. I had rejected the *brachyceros* type of West African shorthorn cattle for improvement by selection because no matter how good the environment, the cattle did not develop into larger animals and from observation of my own work, and that of many native herds of cattle of this type, I came to the conclusion that the *brachyceros* cattle are a genuine breed genetically."

The African dwarf short-horn is a true *brachyceros* and not a mixture. He breeds true to type in Africa, Europe and in Asia as I will show. Furthermore, as an indication that these dwarf short-horn are not derived from the larger type of cattle may be mentioned the following point. The characteristic feature of the culture that goes with this breed is that neither it nor its owners are nomadic. All the large breeds of cattle are at least seasonally nomadic. Thus there is a seasonal transhumance of the herds of the larger cattle according as the grazing sites are in different regions for the dry and wet seasons. In addition, the cattle owners of the larger breeds are often themselves migratory or nomadic. Neither transhumance nor nomadism is found with the small herds that comprise the *Bos brachyceros*.

Faulkener & Mackie (1933, 158) had drawn attention to this cultural feature : "The cattle of the north (Nigeria) can be divided into long-horned and short-horned breeds. The long-horned are associated with the nomadic mode of living while the short-horned types are in Nigeria, to be found chiefly in Bornu and Sokoto, where they are kept under more settled conditions."

Whence Came the *Brachyceros*?

According to Watson (1929, V. 46) : "The ox was certainly one of the earliest, possibly the first, of all animals to be domesticated. As regards Western Europe there is no evidence of domestication in paleolithic times but there are plentiful remains in the Swiss Lake dwellings and other deposits of neolithic age. Domestic cattle existed in Egypt about 3,500 B.C. and possibly much earlier, while Babylonian remains have been assigned to still more remote ages.

"In all likelihood, the wild ancestors of European domesticated cattle belonged to one or more of the subspecies of the aurochs or *urus* (*Bos primigenius*) which was widely distributed in Europe, Western Asia and North Africa in prehistoric times. However, the earliest known domesticated ox in Europe was a very small, slenderly built animal, with short horns, bearing all the marks of a prolonged existence under the care of man and contrasting very markedly with the contemporary *Urus*. The conclusion has been drawn that the original domestication did not occur in Western Europe : probably the little ox (*Bos brachyceros*) . . . was brought from Asia by neolithic man on his migrations. Later, in the Bronze Age particularly, a new and larger type of cattle showing a closer resemblance to the European wild ox, made its appearance. Probably the *Bos brachyceros* had been 'graded up' by crossing with the wild type. The process was, however, not universal, and even to-day breeds like the Shetland, Jersey, Kerry and Braun Swiss show a marked resemblance to the neolithic type."

Kroeber (1948, 692) puts the matter succinctly : "It is clear from the unusually abundant and well preserved lake dwellings of Switzerland that the earliest domestic animals of this region were considerably different from the nearest native species. The wild bull or *urus* of Europe, *Bos primigenius*, was large and long-horned. His bones in the oldest lake dwellings seem to come from wild individuals that had been hunted. Alongside are the remains of the domesticated *Bos brachyceros*, a shorthorned form, small and delicately built. Later, though still in the Neolithic, long-horned tame cattle appear in the lake dwellings. Apparently the short-horns had first been imported from the south ; then the native *urus* was tamed ; finally, the two strains were crossed. These strains are thought to survive in our modern cattle, those of Eastern and Central Europe being prevailingly of the *primigenius*, of Western Europe of the *brachyceros* type."

The point to notice is that the sequence in Europe of domestication of cattle is first the *brachyceros* and then the larger types. The appearance of domesticated types of *Bos* in England and in Africa will be found to follow the same sequence.

Burkitt (1929, II, 244) writes : "Wild cattle (*Bos primigenius*) existed in paleolithic times. They were of large size and had immense spreading horns. The first cattle to be domesticated had short horns and were probably introduced into Europe from Central Asia. They are named *Bos longifrons*, formerly known as *Bos brachyceros*. Later, the *Bos primigenius* was domesticated and hybrids developed."

Bos brachyceros Domesticated First

Burkitt claims that *brachyceros* was the first bovine to be domesticated and the following items support his claim. It is a small animal and so more easily mastered and controlled than any of the larger breeds. This animal would therefore in the beginning be easier to milk than any of the larger types.

Hocart (1933, 111) has something useful to say on milking : "Milking is one of those many arts that seem perfectly obvious to us merely because we have been brought up to the idea. Yet milk has been introduced to the Fijians, and they do not take to it, though urged by Government. . . . They will not trouble to milk. For one thing their social organisation is quite incompatible with the regular routine of a dairy ; and secondly, they do not care for milk. How much less likely is any people to take to it without the example of others ! Could early man have adopted it first for infant feeding when the mother's milk was deficient ? But to give cow's milk undiluted to babies is notoriously bad. Then it is not easy to milk a half-wild cow. Even if she can be kept still, she has the power of retaining her milk." Under such conditions success would appear at the start to be attainable only with the dwarf short-horn.

Yet, roughly speaking, wherever *brachyceros* is found it is generally not milked. This fact is a pointer that it was the first of the cattle types to be domesticated because it illustrates a rule of domestication first enunciated by Russian biologists. On this point, Huxley (1941, 12) writes : "The evolution of the hen is an example of the law, first pointed out by a group of Soviet biologists, that a domesticated animal generally passes through several stages of exploitation. In the first stage it is of no use to man till it is killed. The animal is merely kept to save people the trouble of hunting it. In the second stage it is used while alive, and also killed. In the third stage it is only used while alive."

Bosman (1907, 236), writing of the Gold Coast of West Africa in the 1690s, comments on the fact that the Negroes do not milk their cattle : "This is the only place (Elmina) by reason of the Negroes' ignorance where the cows are milked," to supply milk to the Europeans.

Stewart, in a private communication to me, states : "The West African short-horn cattle in the Northern Territories

of the Gold Coast and on the coastal plains were never milked by their settled owners." During 20 years in the south-eastern provinces of Nigeria I never saw or heard of the Ibibio and kindred peoples ever milking their dwarf short-horn cattle.

Mrs. Leith-Ross (1939, 63), writing of the Ibo, remarks : " Milk is never seen, as to milk a cow or goat would be considered an abomination." Hambly (1934, 336), writing of the people of Angola, says : " The Ovimbundu, with local exceptions, do not use the milk or flesh of cattle, neither is the milk of goats utilised ; vegetable food forms a large proportion of the diet." Sir Harry Johnston (1908, II, 628), writing of the negroes of the Congo, says : " It is needless to remark that any idea of *milking* the cattle or goats is entirely absent from the minds of the Congo Negroes. . . ." In the Military Report on Southern Nigeria (1908, I, p. 61) occurs the following statement which fits in with this Russian law : " They (the Ibo) . . . keep bullocks of a small breed. These bullocks are kept by many of the towns more as a sign of wealth, for presentation purposes, for marriage, and more particularly for funeral feasts than for ordinary food."

In spite of its smallness and therefore comparative ease of handling as compared with the large breeds, the dwarf short-horn is seldom milked, whereas the larger breeds always are. Consequently, it follows from the Soviet law that the dwarf short-horn was domesticated and became diffused before the art of milking had been invented. This conclusion also indicates that the *brachyceros* was the first of the bovines to be domesticated. This conclusion runs counter to the statements of Watson and others, whose assertions are not watertight. In other words, the chronological evidence for the domestication of the large breeds before the *brachyceros* is not clear, definite or positive ; in fact, there is so much doubt that this other evidence vindicates the priority of *brachyceros* as being the first bovine to be domesticated. As such it would be the first domesticated bovine to spread and diffuse with man. It would be followed later by the larger breeds of *Bos*.

The sequence, dwarf short-horn followed by the large long-horn cattle, is found in the early Danubian civilisation. Peake & Fleure (1927, p. 141) write : " The evidence derived from the sites shows us that the people who had developed this civilisation lived in villages of irregular oval huts, sunk some little way into the ground and situated near the streams on patches of sandy loess. In these have been found querns for grinding corn and shoe-last celts, somewhat resembling those of the Thessalians, which were the heads of hoes ; these show us that the inhabitants cultivated grain. The people had a number of domesticated animals, including short-horned cattle, the marsh sheep, and the pig. Bones of long-horned cattle, *Bos primigenius*, have been found in their settlements, but these may have belonged to wild animals hunted and killed for food. The evidence available suggests, however, that hunting was not practised habitually, for the remains of game are scarce, and are rarer still in the later settlements. . . ." However, at Anau the sequence appears to be reversed and Peake & Fleure (b 1927, p. 134) continue : " . . . here we have only to point out the changes that are apparent during the period known as Anau II, which we have dated provisionally as having lasted from 3300 B.C. to 2700 B.C. . . . Wheat and barley were still grown, the long-horned ox, the pig, horse and two breeds of sheep, known in the first period, were still kept. During the second period, however, there were added to their stock a short-horned ox, a breed of hornless sheep, the goat, the camel, and the dog. These additions have been thought to betoken the arrival of a new people, or at any rate new elements of culture from the east."

MacCurdy (1933, II, 153) writes : " The neolithic pile village of Concise (near Vaud, Switzerland) has furnished two species of the domestic ox, one large and the other small and similar to the present Black Forest breed of cattle. Two species of ox, one large and the other small, are also found in the Bronze *terramare* of Italy." In these areas the large beast was now supplanting the smaller animal but it is the spread or diffusion of *Bos brachyceros* that demands attention. Mattingly (1920, 271), in his translation of Tacitus' description of Germany, writes : " It is rich in flocks, but they are for the most part undersized (improcera = dwarfed). Even the cattle lack the splendid brows that are their natural glory."

Friend (1926, 119) shows that these dwarf cattle were being shod in England in the iron age and it will be shown that they were there also in the bronze age : " A very interesting find (in the debris in Wookey Hole, two miles from Wells) was the shoe of an ox, which animal the cave dwellers apparently used for burden or draught: it will be of interest to note that the early workmen made the holes for the nails in exactly the same form as the farrier of to-day uses for his horse-shoes. It is possible that the beast used was the small *Bos longifrons*, the hoof bones of which correspond closely with this shoe in size."

The *Johannesburg Star* of October 4th, 1947, reported as follows : " Bronze age relics of 1500 to 1000 B.C. and evidence of long-lost species of dwarf cattle have been found in the Scilly Isles." These small cattle could be transported by small boats or canoes as will be seen also happened along the coasts of Africa, whereas the larger breeds would be difficult to handle on small boats.

(*To be continued*)

FOURTEENTH INTERNATIONAL CONGRESS OF ZOOLOGY

In its issue of May 30th, *Nature* records that the Fourteenth International Congress of Zoology will take place in Copenhagen during August 5th to 12th, and more than 500 zoologists from 44 countries outside Denmark have already indicated that they will be present. The President of the Congress will be Dr. R. Spärck, Professor of Zoology, University, Copenhagen, and the Secretary-General, Dr. Anton Fr. Bruun, Zoological Museum of the University, Copenhagen. Those who wish to become members of the Congress are invited to apply to the Secretariat, Krystalgade 27, Copenhagen K, Denmark. The membership fee is 100 Danish kroner (about £5). Associate membership costs 50 Danish kroner, but does not entitle the member to receive the proceedings of the Congress. Accommodation may be arranged through any travel agency, and the secretariat is also prepared to arrange hotel accommodation for members but applications should be made as early as possible. A preliminary list of 20 sections of zoology has been suggested, so that it will be possible for members to meet their colleagues in fairly restricted fields, but more sections may be established depending upon the communications offered by members. Zoologists wishing to be present at this Congress should make application through their bankers on Form T.2 for special allotment of exchange for the purpose of attending the Fourteenth International Congress of Zoology.

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The Committee of Privy Council for Agricultural Research and Nature Conservation has reappointed Lord Rothschild, F.R.S., as Chairman of the Agricultural Research Council for a further term of five years, and has approved the appointment of Professor Stephen J. Watson as Deputy Chairman of the Council.

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A Willington, Derbyshire, farmer was fined £2 by the Derby County Magistrates after he had told the Court that he had lost £400 worth of pigs through swine fever. He pleaded guilty "to not isolating pigs after moving them from the market."

REPORT ON FAECAL EXAMINATIONS IN THE DOG

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Introduction

Parasitic diseases possibly account for nearly half the disease conditions commonly encountered in the dog, and probably more in tropical and sub-tropical climates. In the British West Indies this is undoubtedly due to a number of factors, including the large number of stray and owner-less dogs, the small number of dogs brought for veterinary examination, the indescriminate use of popular worm remedies, and the gross faecal contamination of yards, runs, public thoroughfares, etc.

While in theory internal parasitism in dogs should be relatively easy to control, this is far from being the case, as in most instances dogs are immediately re-exposed to infection. The successful eradication of internal parasites depends on the appreciation of the species by microscopic examination, treatment with the correct vermicide, preparation of the intestinal tract by fasting, supportive treatment, and the elimination of reinfection. Without the latter, namely, cleaning and disinfection of runs, disposal of faeces, etc., treatment is useless and animals may be reinfected within a few weeks. It is stated that in a moderate infection with *Ancylostoma* sp., 20,000 ova may be produced per day. The writer is not a parasitologist, and the results of 150 canine faecal examinations are tabulated from the point of view of interest, and because no list of internal parasites has been compiled in St. Kitts. There is no doubt that the list given is far from complete, but it represents the species most commonly found, the majority being identified from ova under microscopic examination. The faecal samples were from private patients and from dogs in the town pound.

Method

When dogs suspected of harbouring parasites are brought for examination, the owners are previously instructed to obtain a faecal sample. The method for examination was by centrifugal flotation method as follows: About 2 grammes of faeces are emulsified with approximately 100 c.c. of water and strained through 1 mm. mesh sieve. The mixture is left to sediment for 15 minutes and the supernatant fluid is then poured off until the sediment is about to flow out. The latter is shaken up and poured into a centrifuge tube with an equal volume of sugar solution at the concentration of 1 lb. to 15 oz. of water. The tube is then centrifuged from one to two minutes at 1,000 r.p.m. The top film of the tube is removed with a wire loop to a slide and examined. Slides are first examined under the 2/3 objective, and for a more positive identification under the 1/6 objective.

Table I
Result of 150 Faecal Examinations

Parasite	Number positive	Per cent. positive
Ancylostoma sp.	96	64·0
Toxocara canis	13	8·7
Toxascaris leonina ...	11	7·3
Taenia sp.	6	4·0
Trichuris vulpis	1	0·7
Dipilidium caninum ...	3	2·0
Totals	130	86·7

Table II
Incidence of Multiple Infestations

Parasite	Number of animals
Ancylostoma sp.—*Toxocara canis*	4
Ancylostoma sp.—*Toxascaris* sp.	1
Ancylostoma sp.—*Taenia* sp. ...	2
Toxocara canis—*Trichuris vulpis*	1

Ancylostoma Species (Hookworm): *Ancylostoma* sp. was found to be the most common internal parasite in both adults and puppies. In many cases this parasite was found in puppies a few weeks old, and all untreated cases died in a matter of days after the onset of symptoms. In all cases the younger the animal the more severe were the effects. Infection is usually by mouth, but the larvae are capable of entering the unbroken skin, the latter route also causing a dermatitis sometimes confused with mange. The adult stage is reached in approximately five weeks, and these adults attach themselves to the mucosa of the intestine and suck blood, causing anaemia, emaciation, listlessness and a typical "tucked up" appearance. Control by the use of sanitary measures in regard to disposal of faeces and the prevention of reinfection is extremely important with *Ancylostoma* infection. Success has been obtained regarding the control of larvae on infected premises by the use of solutions of sodium borate or strong brine. When owners take no sanitary precautions it is a common occurrence for them to return after a month or so with the dog reinfected, claiming that the worm medicine given was not effective.

Tetrachlorethylene was found to be the most effective drug provided the intelligent co-operation of the owner is obtained regarding pre-medication and diet. Several days before dosing it is desirable to give a diet rich in carbohydrates and to avoid fats and oils. The drug is administered, preferably in gelatine capsules, first thing in the morning and after over-night fasting, at the following dosage: 5 to 10 lb. bodyweight, 1 c.c.; 10 to 20 lb. b.w., 2 c.c.; 30 lb. b.w. and over, 3 c.c. One hour after dosing a laxative other than an oily preparation is given; milk of magnesia is effective and reasonably palatable. Food may be given two to three hours after dosing. In cases of severe anaemia it was found necessary to administer tonics such as iron and calcium before and after dosing and to give injections of vitamin B-complex and liver (parenteral). Other drugs used were hexylresorcinol, 0·2 to 1 gramme and N. butyl chloride 1 to 5 c.c. These, however, proved less effective.

Ascaris Species (Roundworm): Found in 16 per cent. of examinations. These were mainly found in young dogs, and in some cases young enough to have indicated intra-uterine infection. Almost invariably older and heavily parasited dogs were infected with hookworm only, and this may indicate some degree of resistance to roundworm infection. A common symptom in older dogs was a chronic cough which did not yield to symptomatic treatment, and possibly was due to the migration of larvae through the lungs. Other symptoms were enlargement of the abdomen and unthriftiness, and in heavily parasitised dogs vomiting mature worms.

" Banocide " (diethylcarbamazine) was found very effective and non-toxic. There is no need for fasting or the administration of a purgative, although with puppies it was felt desirable to administer a laxative to eliminate dead worms as quickly as possible, due to their bulk and possible

toxicity. The drug is best given immediately following a meal in order to avoid emesis. The dosage used is 25 mg. per lb. b.w. When dogs were presented at the surgery for worming this drug was always used. Oil of chenopodium was also found effective in various combinations with castor oil, chloroform, and oil of turpentine.

Hexylresorcinol is used in the same dosage as for hookworms and is very effective. Proprietary preparations are on the market containing the drug in a hard gelatine covering, and these may be given to very young puppies with safety, provided that the directions given by the manufacturers are strictly adhered to.

Taenia and *Dipilidium caninum* (Tapeworm): There is little doubt that a 6 per cent. incidence of tapeworms found on examination is not a true picture, inasmuch as a large number of ova will not be found by the method of examination used. No very marked symptoms were observed apart from general unthriftiness and occasional fits unless there was a heavy infestation, in which case the owner usually observed proglottids in the stools and anal region. It was found that the so-called characteristic symptom of tapeworm infection causing the animal to draw its body along the ground in a sitting position, was frequently due to occlusion of the anal glands. The drug almost invariably used and found to be extremely effective was " Nemural " (Bayer); no doubt it is familiar to most veterinary surgeons.

Trichuris vulpis (Whipworm): Found only on one occasion, and in a dog recently imported from the U.S.A. It does not seem probable that this is an important parasite in this area. The species is found in the caecum and it is doubtful whether it causes any typical symptoms. The dog examined had a mixed infection and was undergoing a routine examination for worms.

Summary

1. The result of a survey of 150 canine faecal examinations is presented.

2. Of the total of 150 examinations tabulated, 86·7 per cent. were found to be positive for parasites, with an average of 64 per cent. *Ancylostoma* sp.

3. Eight animals were found to have a dual species infestation.

4. A note is given on treatment for the various parasites found, and the importance of control measures is stressed.

LEGAL NOTES

Alleged Wholesale Illegal Slaughter of Cattle.—Allegations of wholesale illegal slaughter of between 400 and 500 beasts were made recently at Barnsley, Yorkshire, when Thomas Eaton (34), farmer, Sheephouse Farm, Penistone, was sent to prison for three months for illegally slaughtering three cows on May 6th, and fined £50 for slaughtering another cow on April 28th. His brother, Bernard Eaton, Bank House Farm, Ewden, Sheffield, was fined £20, with £10 costs, for aiding and abetting.

After being sentenced, Thomas Eaton gave evidence involving eight other men charged with offences against the slaughtering regulations. The hearing was adjourned until July 21st, and the eight were granted bail of £20 each.

Mr. Ould, prosecuting, said that Thomas Eaton appeared to have been the hub of an arrangement by which people were able to take beasts for slaughtering to his isolated moorland farm. He had been convicted before for similar offences.

Referring to charges against the eight men, Mr. Ould alleged that it was some of the most serious illicit slaughtering to occur since the regulations were in existence. There were 42 summonses against them relating to a number of beasts.

CLINICAL COMMUNICATIONS

SUSPECTED WARFARIN POISONING IN A COLLIE BITCH

GEO. F. BODDIE AND J. W. BURGESS

History.—The patient was a two-and-a-half-year-old long-haired Collie bitch. The owner gave a history of having put down warfarin-baited oatmeal at frequent intervals during the preceding four or five weeks. The bitch had been seen eating the oatmeal, but when no immediate effects ensued a feeling of false security was produced and no precautions were taken to prevent the bitch having access to the poisoned bait, which she continued to eat at intervals. The bitch was known to have been in season some weeks before this—the exact date was not known and no steps had been taken to avoid service. As the abdomen had enlarged, the owner concluded that the bitch was pregnant ; she had had two litters before this, parturition in each case being normal.

On March 6th the owner noticed the bitch was rather listless, and next day he observed what he described as large blood clots or pups being expelled by the bitch but he did not make a close examination. However, on March 8th the animal appeared very weak ; the slightest exertion caused dyspnoea and dark-coloured fluid was exuding from the vulva. The bitch was taken to Mr. L. Dougal, M.R.C.V.S., Pittenweem, who found it to be extremely anaemic and discharging blood from the vulva. He was able to palpate a rather indefinite mass in the abdomen. From the owner's history it was concluded that abortion was taking place. Glucose saline was injected and 5 mg. menaphthone were injected, the animal being retained in Mr. Dougal's kennels.

Signs.—On March 9th, as the bitch's condition was far from satisfactory, Mr. Dougal decided to send her in to the College hospital. On admission, the bitch was in an extremely weak state, the slightest exertion causing severe dyspnoea. The visible mucous membranes were dead white ; temperature was 101·2° F. The pulse was fast but remarkably strong considering the animal's condition. There was a non-foetid chocolate-coloured slightly granular discharge from the vulva. A rather indefinite mass could be palpated within the abdomen, but a foetus or foetuses could not be identified confidently. As the date of service was unknown, it was decided that any attempt to identify the indefinite mass as a foetus by means of X-rays might lead to confusion. In view of the possibility that there might still be a foetus or foetuses within the uterus, and also because of the risk of infection of the genital tract occurring, it was decided to open the abdomen with a view to performing either caesarean section or hysterectomy. It was realised that this course entailed a considerable risk, but as the signs pointed to bleeding from the genital tract being the principal site of blood loss, it was thought that if this could be checked immediately the bitch would have a better, albeit slender, chance of recovery.

Operation (J. W. B.).—In preparation for the operation the bitch was given 500 c.c. of glucose saline subcutaneously at 5.15 p.m. The animal was shaved and prepared for operation at 6.30 p.m., 1/200th grain of atropine-sulphate being given subcutaneously. Light anaesthesia was induced with 18 c.c. of pentothal sodium solution. A cuffed McGill tube was introduced into the trachea in order that the pentothal anaesthesia could be supplemented with ether. The abdomen was entered in the middle line. There was some blood-stained fluid in the abdominal cavity which was mopped up with sterile swabs. The bladder was emptied by gentle pressure. The uterus was found to be enlarged

as in a well-advanced pregnancy with zones of contraction as between foetuses. The muscle tone was firm but severe haemorrhage had taken place into the uterine wall, particularly in the anterior part of both horns, which were very dark red ; tearing of the wall was beginning in one horn. There was extensive haemorrhage into the anterior part of the broad ligament on both sides. In view of this condition it was decided to remove the uterus ; no foetuses could be palpated in the uterus. Removal of the uterus was carried out in the usual manner and the abdomen was closed by four Mitchell's double loop removable nylon sutures. A sterile swab was put over the wound and two domette bandages were applied. The bitch stood the operation surprisingly well.

Post-operative Treatment and Progress.—At 8.25 p.m. 5 mg. of menaphthone, B.P., were given intramuscularly (after absorption menaphthone is converted into a substance having the physiological actions of vitamin K).

Next morning the animal was remarkably bright. A pint of glucose saline was given subcutaneously and a small amount of fish and milk was taken voluntarily. A further injection of 5 mg. of menaphthone was given in the late afternoon and 20μg. of cyanocobalamine (vitamin B_{12}) were also given. On March 11th the animal continued to make progress ; injection of menaphthone was repeated. There was no visible change in the appearance of the mucous membranes. Throughout the following days the bitch continued to make satisfactory progress ; the injection of menaphthone was repeated daily until a total of six injections had been given : by the sixth day after the operation the visible mucous membranes had taken on an appreciably pink tinge. The operation wound healed by first intention and the animal was discharged on the 18th day thereafter. The only untoward sequel was the development of a small slough at the site of the pentothal injection ; this was healing well at the time the animal returned home.

Blood Picture.—Four blood films were examined during the period the animal was in hospital ; these showed that effective regeneration was taking place and that the intense anaemia was not due to any interference with haematopoiesis. The salient details are given in tabular form :—

Date	*R.B.C. in millions per c.mm.*	*Haemoglobin grammes per 100 ml.*	*B.S.R. mm. in 1 hour*	*Reticulocyte count per cent.*
10.3.53	1,710,000	2·9	83	—
11.3.53	1,460,000	2·9	82	—
16.3.53	2,140,000	4·8	67	19
27.3.53	3,490,000	9·0	45	2·9

Uterine Lesions.—Section of the isolated uterus showed that the site occupied by each foetus was filled by a large firm clot and that there was a considerable quantity of fluid blood present in the uterus. Histological sections of the uterus showed structures resembling maternal placenta with very marked haemorrhage from the endometrium.

Discussion

The action of warfarin as a rat poison is that of an anticoagulant, death of the rat taking place from internal haemorrhage. In its action warfarin closely resembles dicoumarol and other similar anticoagulants. It is unlikely that any animal would at one time consume a sufficient quantity of warfarin-baited oatmeal to produce serious effects, but the continued ingestion of even small quantities has a cumulative effect. It is impossible to estimate how much was eaten by the animal in this case but it is established that she did consume some at frequent intervals over a period of some weeks. The anticoagulant action was most marked in relation to the highly vascular pregnant uterus, where it finally was responsible for abortion followed by persistent uterine haemorrhage. It is possible that if the bitch had not been pregnant she would not have suffered so severely from the anticoagulant effect of the warfarin. The decision to operate on this animal was not an easy one. As events turned out, the decision was a wise one for with the successful removal of the uterus haemorrhage was controlled. While the use of menaphthone no doubt contributed to recovery, it is thought that the two major factors in recovery were that the bitch was withdrawn from further access to warfarin and that further loss of blood was prevented by hysterectomy. It is felt to be at least doubtful if the outcome would have been so successful had treatment with menaphthone been applied for some days prior to surgical intervention.

Gratifying features of the case were the way in which the animal withstood the operation and the steady progress she made thereafter.

Summary

A case of suspected warfarin poisoning in a pregnant Collie bitch is described.

Unknown quantities of warfarin had been consumed over a period of approximately a month.

Abortion was followed by severe uterine haemorrhage.

Operation for hysterectomy was successful and in this way the loss of blood was checked.

Recovery was assisted by the use of menaphthone (equivalent to vitamin K).

Acknowledgments.—We are obliged to Mr. L. Dougal, M.R.C.V.S., Pittenweem, for his consent in publishing this report.

We are indebted to Mr. K. W. Head, B.Sc., M.R.C.V.S., for the report on the pathology of the uterus and to Mr. D. Mitchell, B.Sc., M.R.C.V.S., for the reports on the blood picture.

* * * * *

THE USE OF THE ARTIFICIAL VAGINA FOR THE TOPICAL APPLICATION OF THERAPEUTIC AGENTS TO THE PENIS AND PREPUCE OF THE BULL

G. H. ARTHUR,
Department of Surgery and Obstetrics,
Royal Veterinary College, Streatley

From time to time in cattle practice it may be necessary by means of topical application to treat infections of the external genital organs of the bull. Such treatments are of contemporary interest in relation to the work of Rasbech (1952) which points to the preputial sac as the main location of *V. foetus* infection in the bull. In 1945, in connection with the control of trichomoniasis, the writer introduced a simple method of local treatment of the penis and prepuce of a bull which was being used by artificial insemination and which had been exposed to an accidental trichomonad infection.

Previously the tedious method of Abelein (1941) had been employed in which an anaesthetic solution was injected into the epidural space to the point of posterior paresis when the bull was cast and secured. At this level of anaesthesia there was usually present satisfactory relaxation of the retractor penis muscle, so that with external manipulation of the sheath, the penis could be grasped with a dry cloth at the sheath orifice. Then by careful and sustained traction on the organ, its sigmoid flexure was effaced and the intromittent part of it exposed and dressed.

Methods of dressing the external genitalia with the animal in the standing position which involve irrigation of the sheath or the introduction of antiseptic cones are unsatisfactory, in that owing to the non-erect state of the penis, its mucosa, and particularly that of the prepuce, is thrown into numerous folds and crevices. The surface of this mucosa is only properly available for dressing when the organ is erect.

A simple means of applying a dressing to the erect organ is, very liberally to anoint the lining of the artificial vagina with the therapeutic agent in the form of an ointment or emulsion. The artificial vagina is then filled with water at the appropriate temperature and used as in the collection of semen, except that a semen receptacle is not necessary. The bull is then allowed repeatedly to mount the teaser cow with corresponding introductions of the penis into the artificial vagina until its mucous membrane is thoroughly coated with the antiseptic or antibiotic agent.

To complete the treatment, the hair is clipped from around the sheath orifice and more of the agent is applied manually to this area.

References

Abelein, R. (1941). *Berl. Münch. tierärztl. Wschr.* 357–362.

Arthur, G. H. (1945). Artificial Insemination of Cattle. Thesis. University of Liverpool.

Rasbech, N. O. (1952). Rep. 2nd Int. Congress of Physiol. and Path. of An. Reprod. and A.I., Copenhagen. Vol. III, 159-163.

QUESTIONS AND ANSWERS

The submission of questions for inclusion in this column is welcomed; they can relate to any aspect of veterinary work, but must be of a general nature—questions cannot be considered in which information is sought regarding diagnosis or treatment of specific cases, nor for which solely a private reply is desired. For purposes of record, each question is numbered, and those submitting questions are required to furnish (not for publication) name and address.

Answers to readers' queries represent exclusively the personal opinions of the writers, and criticism of the replies will be appreciated.

All communications should be addressed to the Editor.

Subcutaneous Injection of Saline

Q. 425.—*What adverse effects may the subcutaneous injection of a large volume of saline have on a dog immediately and some time after injection?*

A.—The questioner unfortunately forwards no detail in his enquiry. It would have helped if the size or weight of the dog had been given. Also, it is not easy to interpret what is meant by "large volume of saline." It would also be of interest and would be vital information if one knew the purpose for which the saline was intended and, also, whether the patient was healthy or diseased.

Harthoorn (1953) regards the use of saline solution, presumably in normal amounts, in cases of shock and blood loss as "a safe expedient as long as it is not injected into the blood stream." The same author has also observed, however, that when saline is injected subcutaneously absorption does not take place "unless there is an adequate colloid fraction in the circulating plasma to ensure its assimilation." Although the writer has not employed saline hypodermoclysis for some years in any species, he can recall no immediate adverse effect from reasonable amounts of solution, but retains memories of non-absorption of therapeutic amounts in several instances, followed in some of them by colliquative necrosis, and still less frequently by skin necrosis. It is only reasonable to assume, therefore, that despite aseptic precautions the introduction of a large volume of saline solution subcutaneously may be accompanied by untoward sequelae.

Reference

Harthoorn, A. M. (1953). *Vet. Rec.* **65.** 35.

Feeding of Penicillin

Q. 426.—*Are the beneficial effects of feeding penicillin to pigs and poultry in any way connected with the bactericidal factor in the mould? According to some advertising literature from America that I have been shown, the bactericidal factor is removed at the factory for medicinal use. The residue of the mould, minus the bactericidal factor, contains, it is stated, large amounts of vitamin B_{12} which, for certain dietetic reasons, is highly beneficial to pigs and poultry. If this is correct, the alarm expressed by some correspondents would appear to be unjustified. I know nothing about the question myself and would be glad of an authoritative opinion.*

A.—The beneficial effects of feeding penicillin or other antibiotic supplements to pigs and poultry are certainly connected with the bactericidal factor, though the exact mode of action has not been clearly established. Residues from penicillin manufacture, which themselves contain no penicillin (penicillin feed), have some value as animal feeding-stuffs but are not to be confused with the antibiotic supplements whose activity, as growth stimulants, is related to their antibiotic content.

The aureomycin antibiotic supplements are produced as by-products in the manufacture of aureomycin but, in addition to vitamin B_{12}, these contain significant amounts of aureomycin to which they owe much of their growth-promoting activity.

The use of antibiotics in animal feeding-stuffs was discussed in your issue of March 28th, 1953 (*Vet. Rec.* **65.** 199–201).

. . . . .

Alleged Delayed Sequelae to Dogs Chasing Sheep

Q. 427.—*At a recent County Court hearing in which the plaintiff sued for damages for the deaths of ewes and lambs alleged to be due to their being chased by dogs, the Judge accepted the plaintiff's evidence that the deaths of ewes following the births of dead twin lambs were in fact due to their being chased by dogs 6 to 10 weeks previously. No physical damage was done to the sheep. Is it the opinion of veterinary pathologists that fright could cause abortions and/or deaths of the foetuses as much as six weeks or more later?*

A.—Introducing the Dogs (Protection of Livestock) Bill, Mr. William Teeling stated that 7,000 sheep were killed by dogs in one year. It will be recalled that the Bill was "talked out" (*Vet. Rec.* (1953). **65.** 193). Two recent text-books on sheep diseases (Newsom's "Sheep Diseases" and Belschner's "Sheep Management and Diseases") do not mention the subject. This may be because their authors write from America and Australia, respectively, where sheep worrying may not be a serious problem.

If deaths of ewes following the births of twin lambs were caused by worrying by dogs, in the absence of any physical injury, one might reasonably expect losses to occur within two or three days of the alleged incident. When physical injury is inflicted on pregnant ewes the delay between the accident and abortion or death may be longer: Littlejohn (*Vet. Rec.* (1950). **62.** 577) refers to abortions occurring 13 to 21 days after a road accident, although she admits that tick-borne fever had not been eliminated as a cause. The writer, who cannot speak for "veterinary pathologists," knows of no record of deaths of ewes as late as 6 to 10 weeks after being worried by dogs in which the worrying could be considered the cause of abortions or deaths of the ewes. In the absence of any reliable evidence each case must be judged on its merits, particularly on the presence or absence of any other causes of death or abortion in the flock. Failure to bring forward evidence of any such cause might lead to the

conclusion that the worrying by dogs may have resulted in the deaths, although proof of this was lacking.

During recent months much publicity has been given to the worrying of livestock by dogs and in some areas farmers have given up sheep because of the depredations of dogs. The problem is real but the actual effects on sheep, when worrying does not include physical injury, are difficult to assess ; the problem merits careful investigation both in the interests of the stockowner and of the dog owner. In the absence of such an investigation it is inevitable that, on the one hand, dog owners may be found liable for losses among sheep which occurred a long time after animals were worried and, on the other hand, sheep farmers will not know to what extent the depredations of dogs are responsible for injuries to their flocks. At the present time, evidence of a dog having been seen to chase sheep may well be considered the cause of losses among them and their lambs, sometimes without every effort being made to see whether any other cause was responsible.

The problem of fright as a cause of abortion in cattle is discussed in a comprehensive article in a Swiss journal (abstract in *Vet. Bull.* (1947). **17**. 193) in which numerous instances are quoted of lawsuits or claims brought against the Swiss army for losses among pregnant cattle alleged to be due to discharge of ammunition or explosives. In very few instances was any definite connection recognised as operative. In some cases *ex gratia* payments were made without admitting liability.

ABSTRACTS

Milk as a Diluent of Bovine Semen*

Various observations have been made over a period of years on the use of milk in various forms as a bovine semen diluent. Interest was stimulated by a Czech in 1950 and various workers have since used skimmed homogenised and whole boiled milk as a semen diluent.

The writers of this article used homogenised and pasteurised skim milk heated to 95° C. and motility of samples diluted in this medium compared well up to 16 days with egg yolk citrate diluents.

Semen appeared to store best in milk gently heated to 95° C. for 1 to 10 minutes. In a split sample experiment using boiled homogenised milk without antibiotics on the one hand and egg yolk citrate (1 : 1) with penicillin and streptomycin, some 5,001 new services were carried out.

Based on a 60 to 90 day non-return basis, 72·7 per cent. held to the milk diluent, while 71·4 per cent. conceived to the standard yolk citrate antibiotic diluent ; therefore, based on viability and fertility, the writers consider that milk properly treated may well be used as an easily prepared, practical dilution for bovine semen.

G. F. S.

* **Diluters for Bovine Semen. I. Fertility and Motility of Bovine Spermatozoa in Boiled Milk.** Thacker, D. L., & Almquist, J. O. (1953). *J. Dairy Sci.* **36**. No. 2.

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Effect of Feeding Vitamin B_{12} and Antibiotics to Rats*

The effect on growth and protein utilisation of supplementing rats' diet with B_{12} and antibiotics has been studied. The antibiotics comprised a mixture of aureomycin, streptomycin and terramycin, 100 mg. total antibiotic per kg. The supplemented rats gained in weight and stored more fat than unsupplemented rats. The utilisation of energy-producing food was increased by the presence of B_{12} and antibiotics in the diet. There was no correlation between nitrogen utilisation and feeding B_{12} and antibiotics.

F. A.

* **The Influence of Vitamin B_{12} and Antibiotics on Protein and Energy Utilisation in a Low Protein Diet.** Knoebel, L. K., & Black, A. (1952). *J. Nutrit.* **48**. 477.

REVIEW

[**Canine Surgery.** Written by 29 American authors. Third edition, 1953. Pp. 749. Illus. 220. American Veterinary Publications, Inc., Box 872, Evanston, Illinois. Price elsewhere than in the U.S.A., $15.50 in U.S. funds.]

The third edition of this now well-known book is considerably enlarged and with decreasing difficulties in the publishing world it is infinitely better produced ; the quality of paper is excellent, so improving the illustrations—whether photographic or diagrammatic—in some cases out of recognition. There are nearly 200 more illustrations than in the first edition.

Chapter 3, dealing with healing and repair, and Chapter 4, on surgical principles, have been re-written and expanded and are, if we may say so, considerably improved; students will benefit greatly from this revision. Likewise, Chapter 6 has been re-written and expanded and our previous criticism that suture materials did not receive adequate attention is no longer valid. The chapter on fractures has been recast and enlarged and is illustrated by a profusion of excellent photographs. There can be little of any importance in modern fracture treatment which is not covered here.

One or two omissions may be noted by British readers ; for example, the only method mentioned (other than forceps removal) of relieving thoracic oesophageal obstruction is via a gastrotomy incision ; neither pre-sternal nor trans-thoracic oesophagotomy, is described. Again, under the heading of dystokia (a subject dismissed in a mere seven pages), the use of obstetrical forceps is mentioned only to be discarded lightly as being a method that few practitioners can adopt to advantage ! This will be regarded as somewhat defeatist by the numerous practitioners in this country who have developed the art of forceps delivery of live, undamaged foetuses to a very high degree. In any event, a discussion of dystokia, even if intended for the graduate, is much enhanced by a consideration of normal labour ; since so large a proportion of surgical work arises in connection with dystokia (for after all forceps delivery is a surgical and not a medical technique), we feel that this section could have received more exhaustive treatment in a manual of this size.

Apparently the mammary tumour of the bitch across the Atlantic differs somewhat from that over here. We tend to regard the majority of such tumours as benign, whereas in America the majority are apparently potentially if not actually malignant at the time of surgery.

Despite the popularity and publicity given to conditions attributed to inter-vertebral disc displacements in recent years, the text on this subject in the new edition is virtually unchanged from 1949.

British references are noteworthy only for their paucity.

Such criticisms as we have voiced do not in any way modify our opinion that this book stands out on its own as a manual for the canine surgeon ; we must and most freely do admit that there is no equal to it in the English language at the present time.

IN PARLIAMENT

Slaughter of Animals (Pigs) Bill

In the House of Commons on Friday of last week the above Bill, promoted by Brigadier Rayner to ensure the humane killing of pigs, was read the third time and passed. It will now go to the Lords.

Dogs (Protection of Livestock) Bill

On the same day, on the report stage of the Dogs (Protection of Livestock) Bill, Mr. Hurd moved an amendment to make it an offence for a dog to attack or chase livestock in such a way as might reasonably be expected to cause injury or suffering.

He said he thought the Bill would be improved by narrowing the terms of the offence and making it a more definite offence which could be proved with more reliability in court. The amendment was approved, as were two others providing that:—

A dog owner should not be convicted if he proved that at the time of the worrying someone reasonably believed to be a fit and proper person had charge of the dog;

A person guilty of an offence would be liable, on summary conviction, to a maximum fine of £10 instead of the £20 in the Bill.

The Bill was given an unopposed third reading.

NOTES AND NEWS

Diary of Events

June 20th.—Meeting of the Biochemical Society in the Department of Biochemistry, University of Oxford, South Parks Road, Oxford, 11 a.m.

B.V.A. Technical Development Committee Two-day Meeting

Wednesday, June 24th
2.30 p.m., Technical Development Committee at 36, Gordon Square, London, W.C.1.

Thursday, June 25th
10.30 a.m., Technical Development Committee at 36, Gordon Square, London, W.C.1.

June 24th.—Meeting of the Supplementary Veterinary Register Division, B.V.A., at the Connaught Rooms, Great Queen St., Kingsway, W.C.2.

June 25th.—Annual General Meeting of the North of Scotland Division, B.V.A., at Aberdeen (Northern Hotel), 2.30 p.m.

June 25th.—Meeting of the Western Counties Division, B.V.A., at the University of Bristol Veterinary School, Langford, 2 p.m.

July 15th.—Meeting of the Editorial Committee, B.V.A., 2 p.m.; Executive, 3 p.m.

July 15th.—Annual General Meeting of the Lincolnshire and District Division, B.V.A., at Peterborough (The Grand Hotel), 2.15 p.m.

July 16th.—Annual General Meeting of the Association of Veterinary Teachers and Research Workers (Northern Region) at the Veterinary Investigation Centre, Quarry Dene, Weetwood Lane, Leeds, 11 a.m.

July 23rd.—Meeting of the Midland Counties Division, B.V.A., at Nuneaton (The Newdigate Arms).

July Meetings of B.V.A. Council and Committees
At 36, Gordon Square, London, W.C.1

Wednesday, July 29th, 1953.
11 a.m., Organising Committee.
2.15 p.m., Home Appointments Committee.
4 p.m., Parliamentary and Public Relations Committee.

Thursday, July 30th, 1953.
10 a.m., Veterinary State Medicine Committee.
12.30 p.m., Finance Sub-committee.
2 p.m., General Purposes and Finance Committee.

At the Connaught Rooms, Great Queen Street, W.C.2

Friday, July 31st, 1953.
11 a.m., Council meeting.

Aug. 9th—15th.—XVth International Veterinary Congress, Stockholm, Sweden.

Sept. 6th—12th.—Seventy-first Annual General Meeting and Congress of the British Veterinary Association, at Aberdeen.

R.C.V.S. Examinations

Thursday, June 25th.—M.R.C.V.S. Written Examinations.
Friday, June 26th.—Ditto.

* * * * *

Hotel Accommodation in Aberdeen

We are advised that single bedrooms are still available for the period of the Congress, at all hotels in Aberdeen except the Caledonian, the Northern and the Gloucester. This announcement cancels the somewhat misleading intimation to the contrary, made in our issue of May 9th, which was based on a misapprehension.

* * * * *

PERSONAL

Northern Ireland Veterinarian Appointed Permanent Secretary

Our readers will learn with much gratification of the appointment of Mr. Joseph Irvine Magowan, M.R.C.V.S., D.V.S.M., as Permanent Secretary to the Ministry of Agriculture, Northern Ireland, in succession to Professor R. G. Baskett—an announcement that has given great pleasure to the profession in Northern Ireland.

Mr. Magowan entered the Veterinary Division in 1929 and was Deputy Chief Veterinary Officer from 1942-48. The expansion and reorganisation of the Division during this period was in no small measure due to his efforts. He was appointed Assistant Secretary in 1948, a position he filled with distinction until his present appointment. The appointment is probably unique in that, so far as we are aware, it is the first time that a member of the profession has occupied an administrative post of this status.

Mr. Magowan is a member of a well-known County Armagh family. His brother, the late Sir John Magowan, M.A., K.B.E., had a distinguished career in the Foreign Office. Attaining the rank of Ambassador in 1948, he served in Venezuela until 1951, in which year he died, when about to take up his post as Ambassador to the Government of Thailand, at Bangkok.

His many friends and colleagues offer their congratulations to Mr. Magowan and wish him every success in his new appointment.

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Ministry of Agriculture's Veterinary Field Staff: Transference of Personnel.—The following changes recently have been announced: Mr. H. Edwards, M.R.C.V.S., Veterinary Officer, was transferred from Carlisle to Mold on June 8th, 1953; Mr. R. L. Steele, M.R.C.V.S., Veterinary Officer, was transferred from Haverfordwest to Hertford on the same date.

Mr. G. H. Mills, M.R.C.V.S., D.V.S.M., Veterinary Officer, was transferred from Leamington Spa to the Furness district of Lancashire on June 15th, 1953.

Mr. D. W. J. Munro, M.R.C.V.S., Veterinary Officer, was transferred from Lincoln to Dumfries on the same date.

Mr. J. Tarala, M.R.C.V.S., has been appointed to the permanent staff as Veterinary Officer and will be stationed at Leeds

Ministry's Senior Research Officers in Iceland and Paris.—We are interested to learn that Dr. Ruth Allcroft (one of the Ministry's Senior Research Officers) visited Iceland for a week last month at the request of the Food and Agriculture Organisation of the United Nations in connection with osteodystrophic disorders of cattle; also that Mr. N. H. Hole and Mr. J. R. Hudson (Senior Research Officers) presented papers at the meeting of the Office International des Epizooties in Paris at the beginning of May. Mr. Hole's paper was entitled "Johne's Disease: the use of a complement fixation test in diagnosis" and Mr. Hudson's paper "Peste Porcine."

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Coronation Medal for Lieut.-Colonel J. V. S. Rutter

We are pleased to learn that Lieut.-Colonel J. V. S. Rutter, M.R.C.V.S., of Gwynne Street, Hereford, has been awarded the Coronation Medal for his services to the Army Cadet Force. In recording the distinction the *Hereford Times* observes that it was in 1944 that Colonel Rutter first took an active interest in the Cadets and that when he was appointed Commanding Officer of the first Battalion he threw himself energetically into the task of building up an efficient unit. In 1947 he was appointed Deputy County Cadet Commandant and two years later became the Commandant, "a post he continues to fill with energy and enthusiasm."

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Births.—Brown.—On June 12th, 1953, at Abingdon, to Pauline (*née* White) and Kenneth Brown, MS.R.C.V.S., a sister for David and Alan—Christine Ann.

Forster.—At Barhoyle, Stranraer, on June 9th, 1953, to Mary Elizabeth, wife of John Forster, M.R.C.V.S., a daughter.

Sharman.—On June 12th, 1953, at Raigmore Hospital, Inverness, to Kathleen, wife of G. A. M. Sharman, B.SC., M.R.C.V.S., a second daughter.

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Marriage.—Price—Olley.—The marriage took place on June 6th, 1953, at Holy Trinity Church, Leverstock Green, Hertfordshire, between M. C. Price, M.R.C.V.S., of Leverstock Green, Hertfordshire, and Miss Patricia Olley, of Hatfield Broad Oak, Nr. Bishop's Stortford.

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Veterinarians in Holy Orders.—The Reverend J. A. French, M.R.C.V.S., of the Rectory, Ashby-cum-Fenby, Grimsby, who with the Deputy Chaplain-General officiated last February at the unveiling and dedication of the R.C.V.S. memorial to the fallen, is now joined in his sacred calling by Mr. G. A. Willis, B.V.SC., M.R.C.V.S., of Ipswich. Mr. Willis, who resigned from the staff of the Royal Veterinary College in July, 1952, was ordained Deacon by the Bishop of St. Edmundsbury and Ipswich in Bury St. Edmunds Cathedral on Sunday, June 14th, 1953, and has been licensed as Curate to the parish of St. Matthew, Ipswich.

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Veterinary Students and National Service

The Ministry of Labour and National Service has made the following announcement relating to the National Service Acts, concerning the position of veterinary students completing full-time studies in 1953 :—

1. Veterinary students liable for National Service who are physically fit and who complete their normal course of studies in 1953 will be available for call-up. Veterinary students will, however, be able to secure deferment for further studies in the same way as other university students. A student who accepts an appointment in the Colonial Veterinary Service may have his call-up deferred so long as he remains in that Service.

2. *Deferment for Further Courses of Full-time Study.*—Students are eligible to apply for extension of deferment to undertake full-time university courses of further study or post-graduate research, provided the course of study or research could be completed in time to enable the student to be called up before he would pass out of liability for National Service on reaching the age of 26. Such applications, which must be supported by a recommendation from a university tutor, should be made in writing to the University Joint Recruiting Board, giving full details of the proposed course, dates of commencement and completion and the qualification in view.

3. *Calling-up Arrangements.*—Students due to complete their normal university courses in 1953 will receive a questionnaire asking, *inter alia*, whether (1) they wish to be called up immediately after the end of their final term, (2) they intend to apply for further deferment, or (3) they wish to await their examination result before taking a decision. They will also be asked to state an order of preference for the Services and whether for any reason they would like their call-up to be delayed for a short time. Men who indicate that they do not intend to apply for further deferment will normally be called for medical examination shortly before the end of their final term, but in arranging the date of call-up regard will be paid to requests for call-up to be delayed for a short period. Others will be called for medical examination as soon as it is known that they do not intend to apply for further deferment.

4. *Allocation of Men to the Forces.*—Men who express a preference for the R.A.V.C. will be called up for service in the ranks in that corps. During the period of their basic training they will, if found otherwise suitable, be given an opportunity of appearing before a War Office Selection Board for consideration for a Commission. The number of National Service Commissions in the R.A.V.C. available in 1953 will, however, be less than the number of veterinary students liable to be called up.

Men who express a preference for the Royal Navy or the Royal Air Force will have their qualifications submitted for consideration by the Service concerned. Both the Navy and the R.A.F. will accept only students who are considered suitable for a Commission. Acceptance by the Navy is likely only where the student is a member of the R.N.V.R., or has some special claim for consideration. Men who are not accepted by the Navy or the R.A.F. will be allocated to the Army.

5. *Men Intending to take Posts or Undertake Further Studies Abroad.*—Veterinary students liable for National Service who intend taking appointments overseas are expected, if fit, to perform their National Service before leaving the country, and, except where employment is obtained in the Colonial Veterinary Service, deferment cannot be granted in respect of overseas appointments. Graduates wishing to undertake a further course of study overseas should consult the Secretary of the University Joint Recruiting Board before accepting or entering into commitments in connection with such studies.

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R.C.V.S. OBITUARY

Litt, William, M.R.C.V.S., Home Croft, Hensingham Road, Whitehaven, Cumberland. Graduated N. Edinburgh, May 26th, 1893. Died February 18th, 1953.

Petrie, William Small, M.R.C.V.S., Captain, late R.A.V.C., Sellwood House, Horncastle, Lincs. Graduated Edinburgh, July 14th, 1917. Died June 8th, 1953; aged 56 years.

Formerly a member of the staff of the Ministry of Agriculture and Fisheries, Mr. Petrie, who was a native of Brechin, Scotland, had practised at Horncastle for five years.

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THE LATE COLONEL C. H. S. TOWNSEND

Tribute from an Irish Practitioner

To the many people in Ireland who had the privilege of knowing Colonel Townsend his death has come as a terrible shock. I had known him for only a few years, but to meet him once, see him operate on a roarer and talk to him about horse practice was enough: straight away one had an affection for him. I was thrilled to have met him and was always glad to have a roarer for him to operate on. I wanted to meet him as often as possible. He had a most striking personality, yet despite his skill as a surgeon and his world-wide experience he was a most modest man. Never much to say about what he had done or what he was capable of doing, but always trying to advance his knowledge. Little more than one month ago he came to Ireland and on a big round operated on five roarers in different places in one day. He told me then that he was to judge the heavyweight hunters at the R.D.S. Show next August and asked me to meet him there. He was obviously looking forward with pleasure to act again as judge at the Dublin Show. An unkind fate has decreed that he will not be there. Not only was this fine man a credit to his profession; he was a credit to England and his country should be proud of him. God rest him.

DIPLOMA OF VETERINARY STATE MEDICINE

On the results of the examination held at the Royal (Dick) School of Veterinary Studies in Edinburgh from June 4th to 9th, the following candidates were awarded the Diploma of Veterinary State Medicine:—

Baird, Norman Davidson.
Colley, Anthony H. J.
Nicolson, Thomas B.
Scott, Hugh Maxwell.
Wight, Peter Albert L.

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Second B.V.A. Conference on Problems Relating to Grassland and Fodder Crops

A Correction

In Mr. G. N. Gould's reply to the discussion of his paper, "Management Factors and Their Relation to Problems Arising," at page 33 of the recently issued B.V.A. Publication No. 23, in paragraph 6, line 4, *for* "3 cwt. of magnesium limestone to the acre," *read* "3 TONS of magnesium limestone to the acre."

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Exhibition of Paintings and Drawings by Juliet McLeod, Fores Gallery, 123, Bond Street, London, W.1

The paintings and drawings by this young artist will assure her commissions from owners of horses and other farm animals. She combines happily the photographic with the vitality her own vision supplies. Though many of her horses are depicted at rest, Miss McLeod is quite happy in the depiction of movement, notably her *Stallions fighting* and *The Capriolle*. She should devote further study to the human figures she introduces. Her portrait of our lovely Queen seated on Winston can only be described as disastrous, and she would be well advised to withdraw this picture and so avoid ridicule, that her other adjacent works show she does not deserve when she is dealing with her animal subjects.

E. H.

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ADDRESSES OF DISEASE-INFECTED PREMISES

The list given below indicates, first, the county in which are situated the premises on which disease has been confirmed, followed by the postal address and date of outbreak.

Anthrax:

Hants.—Manor Farm, Beauworth, Alresford (June 6).

Lancs.—Middle Crag Farm, Bay Horse, Ellel, Nr. Lancaster (June 6).

Northampton.—82, Highfield Road, Wellingborough (June 10).

Salop.—Church Farm, Loppington, Wem (June 6); Red House, Little Ness, Nesscliffe (June 11).

Somerset.—Charity Farm, Lovington, Castle Cary (June 10).

Yorks.—Bell Farm, Lofthouse, Fountains Earth, Harrogate (June 9); Cobcroft Farm, Cridling Stubbs, Knottingley (June 11).

Fowl Pest:

Cambs.—113, North Street, Burwell (June 11).

Cardigan.—Pennybwlch Farm, Rhydyfelin, Aberystwyth; Morfauchaf, Llangranog, Llandyssul (June 10).

Carmarthen.—Carubychair Mawr, Llangadock (June 6).

Ches.—Doves View Farm, Lower Whitley, Warrington (June 10).

Durham.—28, Devon Crescent, Birtley (June 6).

Essex.—1, Maclennan Avenue, Rainham; 49, King Edward's Drive, Little Thurrock, Grays (June 10).

Glamorgan.—25, Llewellyn Street, Gilfach Goch, Tonyrefail; 2, Clyngwyn Road, Blaen, Rhondda (June 6).

Hants.—76, Milton Road, Southampton; 8, Manor Cottages, Freefolk, Whitchurch; 148, Gosport Road, Fareham; 16, Stanway Grove, Porchester, Fareham (June 11).

Isle of Ely.—Willow Road Farm, 4a, Fourth Drove, Little Downham (June 6).

Kent.—26, Canterbury Avenue, Sidcup; 31, Eversley Avenue, Barnhurst, Bexleyheath; The Cottage, Tweed Hill, Swanley Village (June 6); 25, Millmead Gardens, Margate (June 9).

Lancs.—2, Dorien Road, Old Swan, Liverpool, 13 (June 9); Hillside Poultry Farm, and Scar End Farm, Weir, Bacup (June 11).

Lincs.—1, Brant Road, Fulbeck, Grantham; Poplar House Farm, Lowfield, Navenby (June 9); Linwood, Market Rasen (June 11).

London.—38, Collin Gardens, Colindale, N.W.9 (June 11).

Middx.—31, Pilgrims Way, Wembley (June 6); 46, Rectory Gardens, Hornsey, London, N.8; 261, Regent's Park Road, Finchley, N.3 (June 10).

Northants.—58, Willis Way, Towcester (June 10).

Radnors.—Terthycolly, Pains Castle (June 6).

Salop.—Gulley Green, All Stretton, Church Stretton (June 10).

Somerset.—2, Rockleigh Beach Road West, Portishead; The Bungalow, Ladymead, Langford, Bristol; Wynhol Farm, Clapton Wick, Clevedon; The Croft, Slade Brook Road, Southdown, Bath; Mushroom Farm, Old Bristol Road, Worle, Weston-super-Mare (June 10).

Sussex.—48, Exton Road, Chichester (June 10).

Warwicks.—No. 1, The Paddocks, Stretton-on-Dunsmore (June 6).

Wilts.—17, Liddington Street, Gorsehill, Swindon (June 9).

Yorks.—153, Smithy Hill, Wibsey, Bradford; 206, Commonside, Hanging Heaton, Batley (June 9); 24, Green Avenue, Whitby; Lea Farm, Hepton-Stall, Hebden Bridge; Scotland Farm, Blackshaw Head, Hebden Bridge (June 11).

Swine Fever:

Beds.—Mobley Farm Piggeries, Stopsley, Luton (June 9); 13, Beeston Green, Sandy (June 10).

Berks.—Ellerdale, Bearwood Road, Barkham, Wokingham (June 9); The Old Rectory, Burghfield, Reading (June 11).

Bucks.—Hipe Farm, Moulsoe, Newport Pagnell (June 11).

Cornwall.—New Farm, St. Mawgan, Newquay (June 11); Southernwood, Goon Bell, St. Agnes (June 12).

Essex.—Pig Sties at Colchester Road, Lawford; Lyndsays Farm, Ingatestone (June 10).

Hants.—Piggeries at rear of 20 and 22, New Road, Tadley, Basingstoke; Elms Road, Hook (June 11).

Isle of Ely.—Fodder Fen, Manea, March (June 12).

Lancs.—Piggeries at Linney Lane, Crompton, Oldham (June 9).

Lincs.—Piggeries and Farm Buildings in Chapel Street, Crowlands; Sandy Bank, New York, Nr. Lincoln; Top Road, Osgodby, Market Rasen, Lincoln (June 9); Crate House Farm, Croft, Skegness (June 10); Manor Farm, Dyke, Bourne; Oak Bridge, Thorpe St. Peter, Wainfleet, Skegness (June 11); Smallholding, Boston Road, Horncastle; Crossmoor Farm, Louth Road, North Cockerington (June 12).

Lothian.—No. 12 Holding, Ballencrieff Drem, N. Berwick (June 13th).

Middx.—420, Oakleigh Road, Friern Barnet, N.20 (June 10); Burton Hole Farm, Burton Hole Lane, N.W.7 (June 12).

Norfolk.—The Hollies, Upper Stoke, Holy Cross (June 9); Victory Inn, Westgate Street, Shouldham, King's Lynn; Home Farm, East Carleton, Norwich; Nr. Church, Foxley, Dereham (June 10).

Northants.—The Garage, Eastcote, Towcester (June 11); 71, North Street, Crowland, Peterborough; Norton Road Allotments, Daventry; Henton House Farm, Byfield (June 12).

Suffolk.—5, Park Drive, Worlingham, Nr. Beccles (June 9); Workhouse Barn, Tattingstone, Ipswich (June 13).

Surrey.—Woldingham House, Linghurst Road, Woldingham (June 9).

Sussex.—Elm Grove Piggery, Elm Grove, Hampden Park, Eastbourne (June 13).

Wilts.—Manor Farm, Froxfield, Marlborough (June 13).

Yorks.—Manor Farm, North Dalton, Driffield; Middle Farm, Dalton-on-Tees (June 10); Tyersal Piggeries, Tyersal, Bradford (June 13).

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NATIONAL MILK RECORDS

The report of National Milk Records, for the year ended September last, which was published recently, reveals that only one-tenth of the herds in the main dairying areas are milk recorded. After a rapid expansion of membership between 1943 and 1948, when 20,000 was reached, the rate over England and Wales as a whole has slowed down. In the past two years there has been no change in the national figure of around 25,000, although divergencies from the general trend have occurred in some of the regions.

The report points out that in the earlier years recruitment was stimulated by transfer from the junior scheme—a simple recording scheme introduced for commercial producers—and there has been, throughout the 10 years during which the recording movement has been administered by the Milk Marketing Board, a simultaneous expansion in membership of dairy breed societies which created a demand for a milk recording service. Herd owners, starting with a few purchased pedigree cattle and plans for an official grading-up policy for their herd, came in in large numbers.

Butterfat Tests

About 67 per cent. of the cows in the milk recording movement are tested for butterfat and the figure for registered stock is about 88 per cent. It is estimated that 10 times as many cows are tested regularly now as in 1943, and expansion continues, it is stated.

Mainly through the Bureau of Records between 300,000 and 400,000 milk records are now supplied to meet requests from A.I. organisations, board and non-board, breed societies, private breeders, research and advisory workers. Much progress has been made in the use of records since the bureau was set up six years ago.

"In 1943 apart from the very few records that appeared from time to time in sale catalogues and show entries, little use was made of them beyond that made by their immediate owner on the farm. Progeny recording on a national basis has become a reality. . . . The bureau has become an integral part of a nation-wide dairy stock improvement plan in which the board, the Ministry of Agriculture, and the breed societies are working together."

WILTSHIRE CATTLE BREEDING CENTRE

A pronounced increase in the number of larger herds in Wiltshire using artificial insemination was reported at the annual meeting of the Milk Marketing Board's Cattle Breeding Centre at Chippenham. The centre serves also sub-centres at Tisbury and Swindon.

Mr. A. Jack, Veterinary Officer to the centre, said there were now 2,400 members of the centre, an increase of 300 on the year. A noticeable feature of the increased membership was that a considerable number of the larger herds in the county were now making use of artificial insemination, although it was primarily intended for the smaller type of herd. The total number of first inseminations from the centre was 27,200, with 4,300 in the peak month of December and 4,000 in January. The conception rate was 66 per cent. Breeds were: Friesians 32 per cent., Shorthorns 29, Ayrshires and Guernseys each 12, beef 10, and other breeds 5 per cent. The fertility level in 90 per cent. of the herds using artificial insemination was satisfactory, and users were entirely satisfied. In the remaining 10 per cent. results appeared to be due to some infertility problem. During the year the centre, in conjunction with the practising veterinary surgeons, had carried out investigations into the probable cause of herd infertility. It had become apparent that the infertility problem had been more severe in the herds using natural service than in those using artificial insemination. He concluded by paying a tribute to the inseminators, who had carried out their duties efficiently and conscientiously, and dealt with a very greatly increased volume of work.

The Chairman (Mr. G. R. Maundrell) said it could not be too strongly emphasised that the veterinary surgeon should be called in immediately infertility was experienced.

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DISEASE OUTBREAKS

Last week outbreaks of swine fever fell from 70 (the previous week's figure) to 60; fowl pest increased to 67 outbreaks and cases of anthrax during the week numbered nine.

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Reuter reports that veterinary surgeons are investigating a mysterious sheep malady which may be connected with American atomic tests in Nevada. All the affected sheep wintered near Caliente, in Nevada, and the Atomic Energy Commission said it was possible they were suffering from radiation burns. Lambs in the affected flocks have been abnormally small this spring and many have died soon after birth.

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Lactation Yields for Each Breed or Breed Type
(All recorded herds)

Breed or breed type	Number of herds				Cows					
	1950-51 No.	1951-52 No.	1950-51 %	1951-52 %	Average yield (lb. of milk)		Average % butter-fat		Average yield (lb. of butter-fat)	
					1950-51	1951-52	1950-51	1951-52	1950-51	1951-52
Main Breeds:										
Ayrshire	3,856	4,120	16·4	17·3	8,146	8,135	3·85	3·87	314	315
Friesian	6,700	7,048	28·4	29·6	9,267	9,243	3·49	3·52	323	325
Guernsey	1,961	2,127	8·3	8·9	7,519	7,422	4·57	4·58	344	340
Jersey	1,593	1,776	6·8	7·5	7,116	7,034	5·08	5·08	361	357
Red Poll	523	554	2·2	2·3	7,478	7,500	3·64	3·66	272	275
Shorthorn	4,822	4,538	20·4	19·0	7,518	7,541	3·60	3·61	271	272
Other Breeds										
British White	7	7	0·0	0·0	6,780	6,961	3·91	4·04	265	281
Devon	19	17	0·1	0·1	5,729	5,979	3·98	3·88	228	232
Dexter	26	26	0·1	0·1	4,814	4,749	4·23	4·21	204	200
Kerry	14	15	0·1	0·1	7,334	6,625	3·89	3·96	285	262
Lincoln Red	69	57	0·3	0·2	7,129	7,129	3·69	3·69	263	268
South Devon	409	410	1·7	1·7	6,697	6,726	4·27	4·27	286	287
Welsh Black	122	119	0·5	0·5	5,760	5,825	4·24	4·00	244	233
Mixed and others	3,457	3,025	14·7	12·7	7,691	7,691	3·71	3·99	285	307
Total—All breeds	23,578	23,839	100·0	100·0	8,168	8,179	3·84	3·87	314	317

Each herd has been given a breed classification if more than 80 per cent. of the animals are of a particular breed type. Herds which have no predominant breed type are classified as "Mixed."

Livestock Export Group

In the annual report of the Group presented at its annual meeting in London on May 18th, with the election of 56 new members during the year ended March 31st, the Group achieved the highest membership figure since its inception, the previous highest figure being 151 in 1947. Its members comprised 10 agricultural, etc., associations, 108 associate members, 41 breed societies and 27 shippers and exporters. Expenditure during the year amounted to £949 5s. as against £966 0s. 10d. in 1951-52.

Exports

"The past year," says the report, "has been one of severe trial for exporters and what looked like establishing an even better record for pedigree farm livestock exports than that achieved in 1951-52, was soon cut short by the foot-and-mouth epidemic which brought with it restrictions on the movement of animals at home and the imposition of embargoes on the importation of stock from Great Britain by many overseas countries. Also, exporters were beset with import restrictions imposed by some countries, notably Australia and Brazil, who, of necessity, were obliged to curb overseas expenditure in their efforts to bring about a more stable financial position within their own economy. However, in making a general survey, it would appear that most countries, and not least our own, have been endeavouring to balance their budgets and the tightening of the belt has been largely necessary.

"The effects of this phase are now showing themselves and it is felt that within the next year or two trade generally will level itself out to more normal proportions. It is difficult to foresee any large-scale buying of stock as experienced in more recent years. The present shortage of meat and other farm products is world wide, and some sources indicate that this situation will continue, if not increase, for some time to come, and therefore we may expect a steady, rather than fluctuating, demand for our pedigree stock.

"The thoroughbred, too, is still much in demand, but that industry is facing a crisis at home through taxation which is giving its members the greatest cause for alarm and unless some form of relief can be afforded breeders and others associated with the industry, then the crisis will be adversely reflected in overseas sales within the next few years to the detriment of the country as a whole. . . . Our stock was imported by no less than 52 countries in 1952. Of livestock, the U.S.A., Australia and Argentina, in that order, were the largest importers, the U.S.A. taking the largest number of cattle, and Japan of pigs. Pigs showed an increase in exports, whereas the export of sheep showed a sharp decline.

"The total value of *all* pedigree animals exported in the year ended December 31st, 1952, amounted to £6,309,971 as against £5,955,435 in 1951, showing an increase of just over one-third million pounds, which would have been even greater had not the movement abroad of farm livestock been impeded by foot-and-mouth and other restrictions. The export of horses and ponies was entirely responsible for the increase in value, whereas the value of cattle and all other animals fell by just over a quarter of a million pounds. The breakdown of figures is as follows:—

	1952.	1951.
	£	£
Horses and Ponies	5,564,204	4,957,059
Cattle	490,642	614,429
All others	255,125	383,947
	£6,309,971	£5,955,435

Quarantine

"During the year under review 270 head of stock were exported through quarantine, comprising 259 cattle, 10 pigs and one sheep, the total figure for the corresponding period in 1951-52 being 1,140 head. As already explained, the foot-and-mouth epidemic was largely responsible for the decrease. Figures of stock which passed through quarantine for the year ended March 31st, 1953, and countries to which they were exported are shown below with comparative figures for the previous corresponding period shown in parentheses:—

	April 1st, 1952 to March 31st, 1953.	
Through Quarantine—		
Australia	121	(235)
Eire	105	(215)
New Zealand	44	(137)
Canada and U.S.A.	Nil	(346)
	270	(933)
Direct Shipments—(Glasgow-Canada)—		
Canada and U.S.A.	Nil	(207)
Grand Total	270	(1,140)

"All countries show decreases and the absence of stock shipped to Canada and the U.S.A. is most remarkable; had conditions not been so unfavourable, the 700 head of stock still on the Group's register for those two countries would have been greatly reduced. However, after undergoing a period of quarantine in Northern Ireland, exports of stock have been filtering through to the West.

"The Group has been given to understand that the extension to the Glasgow Quarantine Station is now approximately half completed. Progress would appear to be rather slow and it is hoped that those responsible will urge for work to be completed as rapidly as possible—we must not be behind when Canada says the word 'go.' The efforts made by the Group in the past year to bring about this improvement to the Glasgow Station, which will vastly speed up shipments by larger numbers being exported, will, the Committee feel, be greatly appreciated by all breeders and exporters. This is a great achievement on the part of the Group of which it can be justly proud, for it is just another example of the value of the Group to all those engaged in the livestock export trade."

Scrapie in Australia and New Zealand

In the section devoted to Australia and New Zealand the report says that the presence of scrapie disease, discovered a short while ago among some of our animals, which necessitated their being slaughtered, has led both Australia and New Zealand to clamp down on further sheep importation from Great Britain. "One realises the danger to those countries if the disease were likely to take hold if it were not stamped out immediately, as it has been, though at the same time the Group feels that with the stricter supervision being given to sheep exports by the Ministry of Agriculture's Animal Health Division and more strenuous research into the disease by our experts, some measures might be taken along the lines of the Ministry's recommendations to make certain relaxations to the present embargo. The authorities of those two countries may rest assured that they will receive the fullest co-operation with their demands from all breeders and exporters and their affiliated organisations in Great Britain all of whom, to say the least, are much disquieted over the situation. A lead by Australia and New Zealand in the matter is eagerly awaited by breeders here, and the Group hopes that information will be forthcoming from that quarter at the earliest opportunity."

Export of Cattle Semen

In reference to the recommendations of the Oaksey Committee on the export and import of cattle semen, it is the opinion of the Group that if the recommendations regarding the *export* of cattle semen are implemented, "only untold harm will be done to the livestock trade both in the home and export markets, the measure of which is difficult to contemplate by virtue of lowering the incentive to breeders to provide top-class bulls for both markets. Other difficulties and hazards also arise which were stressed by the Group when submitting evidence to the Oaksey Committee and your Committee feel that insufficient consideration has been given to all the available facts." The Group is seeking a meeting with the Ministry to discuss the matter further.

High Freight on Horses

An important meeting was held at the Board of Trade in January when such matters as trade agreements, restrictions on currency payments, availability of shipping, box and freight charges were discussed. Particular emphasis was laid on freight charges for animals, including those for all types of horses and ponies, and it is hoped that the outcome of the Board of Trade's investigations will benefit the trade. "The high cost of freight on horses, particularly those exported to South America, and other

stock is still hindering an expansion of the trade, and at the time of writing this report, two instances have been brought to the notice of the Group where South American importers have, in one case, complained of the enormously high freight charge for thoroughbreds, and in the other, cancelled the purchase of an animal for the same reason. There is growing evidence, too, of Australian buyers holding off making purchases because of high freights which, with the withdrawal of the Australian Government's freight assistance scheme, are making themselves felt acutely. A potential market for ponies exists in Australia, New Zealand and U.S.A., but high freights prevent our entry. Competition is becoming ever wider and exporters will not hesitate to use those Lines whose freights are most economical."

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Since October, 1951, Mr. M. Westmacott, a member of the triumphant Everest expedition, has been a member of the statistics department at Rothamsted Experimental Station, where he specialises in statistical problems of experiments with animals. Mr. Westmacott was among those responsible for the organisation of the trials with antibiotic supplements in pig feeding on the results of which the statement issued by the Agricultural Research Council in November was based.

CORRESPONDENCE

The views expressed in letters addressed to the Editor represent the personal opinions of the writer only and their publication does not imply endorsement by the B.V.A.

THE PRACTITIONER AND HIS DRUGS

Sir,—With reference to your correspondence " The Practitioner and His Drugs," I cannot see what the pharmacists have to complain about. Most veterinary surgeons do recognise the position of the retail pharmacists and their legitimate interests. The veterinary profession has never had a monopoly of the sale of drugs and appliances for veterinary treatment. One has only to visit any large chemist's shop (and many small ones) to see counters stacked high with " drinks," embrocation, worm pills, calving ropes, syringes, milk-fever outfits, pessaries, etc. The representatives of many wholesale and retail firms visit farmers at will, proffer their advice and sell crates of patent drinks, ear-marking forceps, etc. We as a profession cannot do anything about this and would be very foolish to try even if we wished. In fact, it would seem that veterinary medicines are almost too widely stocked and sold. If I so desire I can purchase worm medicine for cattle, teat ointments, etc., from a local firm that also sells chemical fertilisers, weed-killers, lime, compound pig foods, potatoes (seed and stock feed), as well as coal! There is thus no question of monopoly.

Retail pharmacists are not allowed to sell certain dangerous drugs, sulphonamides, penicillin, certain vaccines, etc., for human use without a prescription, so why should they desire to sell these for animal use? They are allowed, very properly, to sell any medicine on prescription for human or animal use. Incidentally, they are allowed to sell veterinary medicines without printing the formula on the bottle, but must do so for human preparations.

In this country one does not see huge boards advertising " Piles Specialists," etc., outside a shop as I have frequently seen abroad. The pharmacists do not set up to treat human beings, so why should they desire to treat animals? Some years ago I believe that it was common for chemists to run lethal chambers for small animals as part of their service to customers. I notice that they have now generally abandoned this unpleasant (and unremunerative) practice.

As regards prescriptions, clients have a habit of expecting the veterinary surgeon to produce instantly and administer personally the required medicine from the back of his car as and when required. When the Welfare State reaches the veterinary profession then perhaps the V.S. will be adequately rewarded by the State and will only have to drive up to a farm (between the hours of 9 a.m. and 4 p.m.!) and proceed to examine an animal, and then if necessary (and even perhaps if not strictly necessary) he will hand to the farmer or his duly authorised agent a prescription made out and perhaps stamped as by law required. The V.S. will then drive off. The farmer or his representative will then proceed to the nearest town as best he can and hand his prescription to the pharmacist. The pharmacist will then weigh out the required mag. sulph., boll. armen. or " what have you " and " div. in pulv. six," etc. The pharmacist then hands out the completed prescription to the farmer (or his rep.) and his bill to the State. I suspect that even then he would prefer to hand out a number of tubes or some other attractively packed preparation (less trouble, more profit). We may perhaps live to see the day when the veterinary profession is publicly reproved for over-prescribing So & So's Black Drinks, White Oils, etc., instead of some standard (and cheaper) preparations.

Perhaps some pharmacists might even undertake to visit (and catch) herds of pigs, flocks of sheep, etc., and personally administer the required drug or vaccine. If and when the pharmaceutical profession has taken over from the " veterinary " then perhaps ironmongers will object to their selling razors and scissors, barbers object to the sale of hair oil and public house and café keepers to the sale of soft drinks and tobacco. The possibilities are endless.

I have no doubt that the pharmaceutical profession and we ourselves are activated by the profit motive. There is nothing disgraceful in this. However, it is recognised by law that the use of certain substances must be restricted to those best qualified to do so. Never forget that these people are also responsible in law for their activities.

This is not the place to go into the details of the financial aspects of veterinary or pharmaceutical practice, but I feel that it is imperative for me to say that hard economic facts make it necessary for the practising veterinary surgeon to sell medicines as well as to diagnose disease and complete surgical and obstetrical manipulations. Were it otherwise I, for one, would be only too delighted to cut down the considerable capital outlay necessary to run even a small practice to-day. Consider the added expense falling upon the farmer if the V.S. did not sell drugs. The farmer would have to pay the V.S. for diagnosis, etc., and also to fee the pharmacist to dispense drugs or even to remove packages from his shelves.

Anyone familiar with present-day practice will agree that the V.S. does not make an exorbitant profit; in fact we are probably not so well rewarded as are members of some other professions. When we hear of V.S.s making huge fortunes then it will be time to examine this aspect more closely. In reality the boot is on the other foot and the time is perhaps not far distant when the profession will have to examine very closely the financial aspects of practice.

To conclude, I think that we ought to agree to let matters stand as they are and to recognise, as I think we do, each others' usefulness to the general public and to ourselves. From time to time there will have to be adjustments as there have been in the past, to meet changing conditions. Do not let us stir up unnecessary trouble or make enemies of our friends and allies.—Yours faithfully, John G. P. Wood, Moorcroft, Reepham, Norfolk. *June 7th*, 1953.

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Sir,—May I speak on behalf of the stockowner in this controversy over the dispensing of veterinary medicines? Both parties—the veterinary profession and the pharmacists—seem to have forgotten the main issue in their concern over their " professional status." What is going to be most beneficial to the livestock industry?

Mr. Waddington's letter is a study in impertinence and does his profession a disservice.

I dislike criticising the veterinary profession, which is a very fine body of people, but I do consider that more use should be made of the prescription, leaving the pharmacist to dispense. After all he is the expert, by reason of practice, if nothing else. I would remind Mr. Waddington that the revised regulations in the materia medica course for the M.R.C.V.S. diploma stress a wide *general* knowledge of drugs and their actions and not a detailed knowledge as is required for pharmacy.

I know the stock argument put forward by the veterinarian is that farms are too far from retail chemists to have prescriptions prepared, but if the practice was universal the chemist would find that it paid to travel round the farms with a van equipped as a travelling dispensary.

The profit accruing to the veterinarian from the supplying of drugs direct to the stockowner has become a major part of his income. Surely this lowers the " professional status " that worries Mr. Waddington so much.

On the other hand, the pharmacist must set his house in order. He must stop supplying drugs direct to the farmer unless on a veterinarian's prescription. He must banish for ever patent medicines: those red, white and blue drinks which are an abomination.

Both sides must forget professional pride and consider the well-being of the animal.—Yours faithfully, Stewart Macfarlane, Englewood, Kilmacolm.

BOVINE INFERTILITY

Sir,—May I make use of your columns to thank Mr. Rowson and his colleagues for the excellent account of their most interesting experiments in your Coronation issue of May 30th?

Their results help to explain some of the puzzling aspects of bovine uterine infections. They also lend support to the modern conception that non-specific uterine infections are caused by ovarian dysfunction, in contradiction of Nielsen's original theory that ovarian dysfunctions (such as ovarian cysts) arise from uterine infections.

For some time many veterinary surgeons treating infertility in the field have used oestrogens to treat open and closed pyometra cases, but often have been disappointed in the case of the chronic catarrhal endometritis (usually associated with *C. pyogenes* infection) as frequently the infection tends to recur before conception can be established. Intra-uterine oestrogen therapy has appeared to be more successful than parenteral.

There is, however, a word of warning to be given concerning the use of oestrogen therapy in these pyometra cases. Probably due to the fact that these animals are endocrinologically unbalanced, there is a strong tendency for cystic ovaries to develop with persistent nymphomania, which does not respond well to treatment (even if only 25 mg. of stilboestrol have been given), and the second state of the animal is worse than the first!

In my experience, purulent catarrhal endometritis often occurs as a herd condition, especially in the winter months. It is commonest in herds which are feeding and "steaming up" for high production and often is associated with acetonaemia and laminitis.

In addition to these excellent investigations into endocrine function, therefore, it would be valuable to ascertain if management, nutrition and other aspects of the environment are primarily responsible for the endocrine dysfunction which facilitates the uterine infection.—Yours faithfully, J. G. Wilson, Ministry of Agriculture and Fisheries, Sterility Advisory Service, Veterinary Laboratory, Staplake Mount, Starcross, Devon. *June 1st*, 1953.

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"MASS SHOCK PHENOMENON IN SHEEP"

Sir,—Had I encountered 15 years ago a similar condition in sheep to that described by Mr. Phillips in last week's *Record*, I also would no doubt have blamed the prevailing climatic conditions. In the intervening years, however, I have met so much disease of nervous origin in all species of animal under all possible conditions that I believe the affection in the ewes belongs to that especial category. Recently I have had a similar occurrence in nine lambs out of a flock of 30 in perfect weather conditions. The *post-mortem* findings of Mr. Phillips are particularly interesting in so far as the jelly-like accumulation in the mesenteries reminded one of the oedema in the bowel of the pig. As a rule, the oedema occurs only in slips and bonhams, whereas inco-ordination, partial or general paralysis—present in oedema disease—may be met with in pigs of all ages as in all other species. In fact the unprecedented appearance of paralysis in all animals—including poultry—has been very much in evidence in this country for 15 or 16 years. Judging by the communications which have appeared in the *Record* during the same period, the condition seems to be also prevalent in Britain.

It is surprising that the investigation of this extraordinary manifestation was not undertaken long ago.—Yours faithfully, T. Treacy, Nenagh, Co. Tipperary. *June 13th*, 1953.

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DOG MEAT SOLD AND CONSUMED AS GOAT MEAT

Sir,—"Beware, there's many a pussy cat taken for hare" applies as well to dog and goat; hence our reason for reporting this case which took place recently in Venezuela and appeared in the principal Press of Caracas, with the names of the unfortunate consumers. The victims of the fraud were 19 players in a match, at a place within 20 miles of Caracas, the capital of Venezuela. Two dressed dog carcases, sold as goat meat and bearing the official market stamp, were bought at the local market of Maiquetia. All the players suffered stomach trouble after consuming the meat, which was prepared in the customary way by boiling, along with vegetables. Fortunately, upon feeling ill, they took purgative medicine. The meat of one of the dogs was consumed, the other was put on ice in order to preserve it for the following day. In due course, the case was reported to the Civil Chief of the district, who called the sanitary officials to investigate. The result was that the remaining dressed carcase proved, upon examination, to be dog and not goat. The public are apprehensive, because during the last few years there has been an epidemic of rabies in this country. Dogs found without a muzzle and collar are confiscated and taken to certain centres to be destroyed. Also poison is often laid at night to destroy stray dogs.

There is yet a far greater risk of being deceived, as far as the public is concerned, by buying locally made sausages adulterated with minced dog meat, which can easily be disguised by "sharpers" who are experts in such fraudulent trade. Here is a question for students of meat inspection: how to identify minced dog meat when a small percentage is mixed with meat from other animals such as cattle, goats, sheep, pigs, etc., in sausages?

This case has brought back to mind the day, years ago, when the City Veterinary Inspector of Liverpool put up a fat carcase of a dog among the sheep carcases at the abattoir, as a trap for the students, to warn them not to be caught the second time; especially on the day of judgment which was to take place the same week.—Yours faithfully, Edward Morgan, Apartado Postal No. 75, Valencia, Venezuela, S. America. *May 25th*, 1953.

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"ANIMALS I HAVE MET"

Sir,—Mr. Ogilvie's interesting and amusing article on the skunk stirred memories which made my nose twitch reminiscently. The skunk of South America apparently differs in no way from the species in North America. It was an axiom when in the habitat of *memphitis memphitis* and its presence was even suspected, to proceed at speed in the opposite direction, when on foot, or, if in a car, to close all the windows and "step on the gas." The skunk undoubtedly is in a class by himself.

Nevertheless, while giving in British fashion honour where honour is due, especially to a foreigner, it is only fair that we should acknowledge the potency of one of our own animals, which in its humble way is no mean performer in its assault on the olfactory organs. I refer to the common domestic (more or less) tom-cat. In the course of our work we are sometimes called upon to reduce from his high estate an elderly male of the feline species. He very rightly resents these attentions and expresses his disapproval in the time-honoured fashion. Those garments or parts of our person which obstruct his stream of invective speak loudly, for a time, of his sorrows.

The garments need not be buried six feet deep; a period hanging on the clothes-line at the bottom of the garden, followed by a visit to the cleaners, is usually sufficient to restore them to usefulness.

From where I sit I see, waving like bunting in the breeze, a pair of trousers which bear mute witness to one such recent encounter: and this tom was not unique (or should I say eunuch).—Yours faithfully, Wm. S. Gray, 54, Clifford Road, Princes Risborough, Bucks. *June 13th*, 1953.

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VETERINARY TEACHING

Sir,—As a veterinary student I welcome Professor Formston's remarks concerning teaching at the Symposium held by the Association of Veterinary Teachers and Research Workers.

Without discussing the merits of formal lectures, one may point out that, in fact, these are regarded by most veterinary schools as an essential part of the training, so much so that attendance is compulsory. My plea is for improved technique and style in lecturing. The lecturer is in a privileged position. His audience is guaranteed, and the index of success or failure is quiet attention or the furtive conversation or newspaper.

Those responsible for the elementary education of children are instructed in method before they are granted a certificate to teach. The university teacher, holding a specialist degree, often lacks this instruction. Consequently lectures are given which are no credit to the deliverer and no use to the student. Is there an excuse for a lecture lacking coherent thought, expressed in bad English, given in inaudible tones? Is there an excuse for a lecture given word for word from a standard text-book? Surely lectures should inculcate a way of thought; detailed knowledge is to be obtained elsewhere. I submit that while such faults as this exist in teaching it is not surprising that the standard of expression amongst veterinary students is as low as examiners declare.—Yours faithfully, M. A. P. Simons, South Norwood Hill, London, S.E.25. *May 30th*, 1953.

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R.C.V.S. COUNCIL ELECTION

Sir,—I shall be grateful if you will allow me to use *The Veterinary Record* to thank those who voted for me in the recent elections for Council, R.C.V.S.—Yours faithfully, R. Lovell, Royal Veterinary College and Hospital (University of London), Royal College Street, Camden Town, N.W.1. *June 15th*, 1953.